



AEROSPACE MATERIAL SPECIFICATION

AMS5810™**REV. C**

Issued 1994-08
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Revised 2025-10

Superseding AMS5810B

Steel, Corrosion- and Heat-Resistant, Flat Wire,
15Cr - 25.5Ni - 1.2Mo - 2.1Ti - 0.006B - 0.30V (A286),
1800 °F (982 °C) Solution Treated, Cold Drawn or Cold Rolled and Aged,
Consumable Electrode Remelted
(Composition similar to UNS S66286)

RATIONALE

AMS5810C is the result of a Five-Year Review and update of the specification. The revision updates the Title to add the common trade name (see 8.6), revises composition testing and reporting (see 3.1), required country of origin to be reported (see 4.4), allows the use of prior revisions (see 8.4), and prohibits unauthorized exceptions (see 3.8, 4.4.1, 5.1.1, and 8.5).

1. SCOPE

1.1 Form

This specification covers a corrosion- and heat-resistant steel in the form of flat wire.

1.2 Application

This wire has been used typically for retaining rings requiring corrosion and heat resistance up to 900 °F (482 °C) and that may require moderate to severe forming and bending, but usage is not limited to such applications.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (U.S. and Canada only) or +1 724-776-4970 (outside U.S. and Canada), www.sae.org.

AMS2248 Chemical Check Analysis Limits, Corrosion- and Heat-Resistant Steels and Alloys, Maraging and Other Highly Alloyed Steels, and Iron Alloys

AMS2371 Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steels and Alloys, Wrought Products and Forging Stock

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Documents

Standard, visit Sharing Hub

AMS2750 Pyrometry

AS7766 Terms Used in Aerospace Metals Specifications

HS-1086 Metals and Alloys in the Unified Numbering System

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM A370 Mechanical Testing of Steel Products

ASTM A751 Chemical Analysis of Steel Products

ASTM E140 Standard Hardness Conversion Tables for Metals Relationship Among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Superficial Hardness, Knoop Hardness, Scleroscope Hardness, and Leeb Hardness

2.3 Definitions

Terms used in AMS are defined in AS7766.

3. TECHNICAL REQUIREMENTS

3.1 Composition

Composition shall conform to the percentages by weight as shown in Table 1, determined in accordance with ASTM A751 or by other analytical methods acceptable to the purchaser.

Table 1 - Composition

Element	Min	Max
Carbon	--	0.08
Manganese	--	2.00
Silicon	--	1.00
Phosphorus	--	0.025
Sulfur	--	0.025
Chromium	13.50	16.00
Nickel	24.00	27.00
Molybdenum	1.00	1.50
Titanium	1.90	2.30
Boron	0.003	0.010
Vanadium	0.10	0.50
Cobalt	--	1.00
Aluminum	--	0.35
Copper	--	0.50

3.1.1 The producer may test for any element not listed in Table 1 and include this analysis in the report of 4.4. Reporting of any element not listed in the composition table is not a basis for rejection unless limits of acceptability are specified by the purchaser.

3.1.2 Check Analysis

Composition variations shall meet the applicable requirements of AMS2248.

3.2 Melting Practice

Steel shall be produced by multiple melting using consumable electrode practice in the remelt cycle.

3.3 Condition

Wire shall be solution heat treated, descaled if necessary, cold drawn or cold rolled to required size, and aged.

3.4 Heat Treatment

3.4.1 Heating Equipment

Furnaces may be of any type. The heating medium or atmosphere shall be dry nitrogen or other atmospheres that will not alter the surface composition.

3.4.2 Solution Heat Treatment

Except as specified in 3.4.2.1, wire shall be solution heat treated by heating to 1800 °F ± 25 °F (982 °C ± 14 °C), holding at heat for not less than 1 hour, and quenching in oil. Pyrometry shall conform to AMS2750.

3.4.2.1 Continuous Heat Treating

Process parameters (e.g., furnace temperature set points, heat input, travel rate, etc.) for continuous heat-treating lines shall be established by the material producer and validated by testing of product to the other requirements of this specification.

3.4.3 Aging Heat Treatment

Wire, cold drawn or cold rolled to required size, shall be aged by heating to a temperature within the range 1150 to 1325 °F (621 to 718 °C), holding at the selected temperature within ±25 °F (±14 °C) for 4 to 6 hours, and cooling at a rate equivalent to cooling in air. Pyrometry shall conform to AMS2750.

3.5 Properties After Aging Heat Treatment

The product shall conform to the following requirements, determined in accordance with ASTM A370:

3.5.1 Tensile Strength

Tensile properties shall be within the range 185 to 240 ksi (1276 to 1655 MPa).

3.5.1.1 The rectangular cross-section area of the wire specimen for the tensile test shall be determined from measurements of thickness and width taken prior to the tensile test. The area on which stress is based shall be determined as shown in Equation 1.

$$A = TW - 0.12 (T)^2 \quad (\text{Eq. 1})$$

where:

A = area (for this test) of wire cross section, square inches (square millimeters)

T = thickness of wire specimen, inches (millimeters)

W = width of wire specimen, inches (millimeters)

3.5.1.2 Unless otherwise specified, the strain rate shall be set at 0.005 in/in/min (0.005 mm/mm/min) and maintained within a tolerance of ±0.002 in/in/min (±0.002 mm/mm/min) through 0.2% offset yield strain. The requirement for compliance becomes effective for material produced 1 year after the publication date of this document.